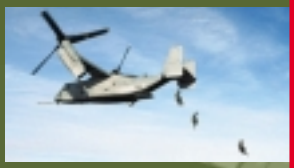
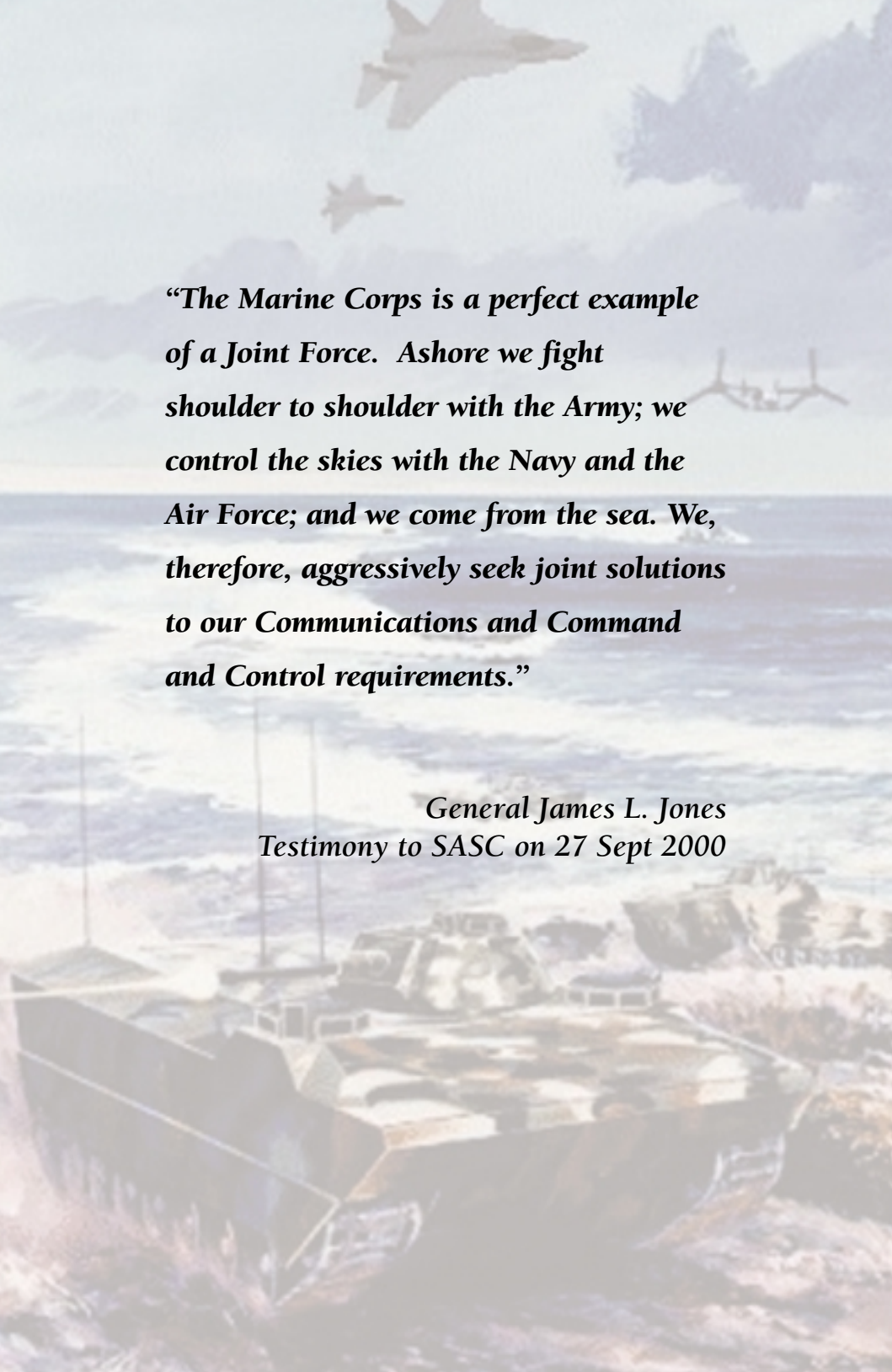


# *C4 Campaign Plan*

COMMAND, CONTROL, COMMUNICATIONS AND COMPUTERS
Headquarters, U.S. Marine Corps, Washington, D.C.
C4



***"The Marine Corps is a perfect example of a Joint Force. Ashore we fight shoulder to shoulder with the Army; we control the skies with the Navy and the Air Force; and we come from the sea. We, therefore, aggressively seek joint solutions to our Communications and Command and Control requirements."***

*General James L. Jones*
*Testimony to SASC on 27 Sept 2000*

# Introduction

During the Gulf War, our Armed Forces experienced first-hand the vital contribution made by C4 as a warfighting enabler. In the diverse and challenging future environments that our forces will operate, the role of C4 can only be expected to grow in importance. Our warfighting concepts themselves are continually evolving to capitalize on the rapidly increasing capabilities of advanced information technology. We plan to exploit information superiority to our maximum advantage. Robust C4 is one of the key elements of ***Marine Corps Strategy 21***. Properly developed and employed – information technology can heighten our situational awareness, improve our decision-making capability, and optimize the effects of our weapons systems.

The Marine Corps must carefully employ finite resources to satisfy its evolving warfighting requirements. Therefore, our priorities include identifying and funding those C4 systems that support emerging operational concepts, modernizing our network infrastructure, and carefully scrutinizing new capabilities. When developing selected new capabilities for use by our forces, we must not think in terms of "things" or "pieces." Instead, we should think in terms of an end-to-end warfighting capability and all that is required to employ it effectively in the diverse battlespace environments of the future.

Our MAGTF's must meet the challenges of Joint and multinational C4 systems interoperability, while also protecting our networks and systems from attack. Clever adversaries will attempt to find vulnerabilities and take

away our information technology advantages through "asymmetric attacks." We must be prepared to deal with that possibility.

Of course, all of our efforts will be for naught without quality Marines and civilian-Marines to install, operate and maintain our systems. **Our number one C4 priority must remain the recruiting, retention and training of Marines**. Without appropriate skilled Marines and civilian-Marines, the potential of information technology and its support to our warfighters will fall short of the mark.

Because technology is changing so rapidly, this Campaign Plan looks at where we are today and then focuses on the time frame we can most directly influence i.e., across the Future Years Defense Plan (FYDP).

As the Director, Command, Control, Communications and Computers, I am committed to ensuring that the Marine Corps has the right C4 capability — operated and maintained by trained and knowledgeable Marines — prepared to support all our assigned missions.

**Robert M. Shea**
**Brigadier General**
**U.S. Marine Corps**

# Capabilities

The promise of technological advancement is to provide a seamless end-to-end capability that allows Marines to execute their missions with greater efficiency and effectiveness.

Advancing technologies will streamline the information flow within our C4 systems, significantly enhancing command and control for Marines. C4 supports expeditionary warfare and extends from the Operating Forces back to the Supporting Establishment. It supports information requirements for commanders engaged in operations and contingencies throughout the modern battlespace.

As a force multiplier, this end-to-end capability will deliver information at the right time, to the right place, and in a useable format, allowing commanders to exercise command and coordination, regardless of proximity to their assigned forces.

The "reachback" capability enabled by C4 will allow Marines access to a wide range of information, materiel

> *"Technologically advanced weapon systems require joint, secure…interoperable systems to support them. This improved capability is critical to allow commanders the ability to manage, direct, and influence an increasingly complex battlespace."*
>
> *-General James L. Jones*
> *Electronic Business Strategic Plan 2001-2002*

and expertise by facilitating direct ties to Supporting Establishment resources, adjacent units, and units occupying positions throughout the battlespace.

To accomplish this, HQMC C4 supports C4 requirements and commensurate funding to ensure support to our warfighting functions. We do this using an integrated approach including:

- Reviewing and endorsing our C4 requirements
- Establishing policy for system development that assures interoperability and cost effectiveness
- Developing an information architecture to guide C4 planning
- Developing a backbone infrastructure to move information
- Sponsoring C4 systems that satisfy warfighters' information requirements, emphasizing interoperability while eliminating unnecessary or duplicate legacy systems.

## Amphibious Requirements

To support our amphibious MAGTF command and control needs, C4 systems must be built to satisfy a number of challenging threats and environments.

The Marine Corps relies on the Navy for C4 support afloat — particularly for backbone communications and services. As a result, we must continue to clearly define our amphibious requirements. We will pursue:

- Formalizing the C4 requirements development process between the Navy and Marine Corps
- Providing updated amphibious C4 requirements on a timely basis



- Engaging the Navy to ensure Marine Corps needs are met and our future operational concepts are supported
- Ensuring that shipboard installations are integrated into budgets and schedules commensurate with Marine Corps planning
- Ensuring a robust C4 infrastructure is available to Marine staffs and forces while embarked.

In conjunction with CNO N6 and N75, we have identified and will work to drive the following key warfighting elements:

- Develop a Naval amphibious C4 operational architecture
- Work with the Navy's Resource Allocation Process to support required shipboard systems
- Track Naval interoperability and the status of C4 installations
- Ensure Marine programs fit within the Naval C4 systems architecture
- Identify levels of "operational sufficiency" and enforcing configuration discipline
- Actively participate in the "D-30" process, tracking ships' C4 systems installations and readiness for 30 months prior to deployment
- Synchronize the fielding of system capabilities with Systems Engineering and Integration (SE&I) Division within the Marine Corps Systems Command (MCSC)
- Ensure that our Fleet Allowance C4 Marine (FACM) billets are aligned to more effectively represent Marine Corps needs.

## C4 Systems

> *"Speed is about how quickly we operate on the battlefield — it's about communications connectivity."*
>
> *General James L. Jones,*
> *Keynote Address to Fletcher Conference, 26 March 2001*

Our C4 systems provide critical warfighting assets. Combined with our C4 infrastructure, we have a comprehensive C4 capability that provides the rapid delivery of information. Future capabilities demand systems that are:

- Highly mobile, modular and capable of true on-the-move communications allowing the commander and his staff to operate from a place and at a time of his choosing
- Easy to install, operate and maintain (IOM)
- Less manpower intensive
- Able to seamlessly support line-of-sight to global communications
- Integrated and based on open standards so the network can evolve in a modular fashion, adding capability and merging legacy and new systems
- Jointly interoperable
- Designed with security built-in from the beginning
- Limited in their power consumption requirements.

To meet our ever-growing demand for information, we will identify our baseline bandwidth requirements in support of a



MEU, MEB, MEF, and MARFOR both afloat and ashore in Joint/multinational operations. To accomplish this, a series of MAGTF C4 architectures must be developed. Further, to ensure a seamless network and ease of use, we will strive to use the same architectures in both Supporting Establishment and deployed environments. For example, we need to extend SIPRNET to battalions, squadrons and selected companies.

C4 capabilities must be developed to create and manage a relevant Common Operational Picture (COP) in the Joint and multinational environment, ensuring that our MAGTF information exchange requirements are met. Along with C4 systems development, we need to ensure that a rigorous set of Standard Operating Procedures (SOPs) and Tactics, Techniques and Procedures (TTPs) are created that support COP development. Further, the Marine Corps must develop a skilled set of battlespace track managers.

We must field a standardized JTF/MAGTF C4 enabler package that is mobile and expeditionary — one that contains the essential connectivity and C4ISR elements required for all commands.

Recent advances in the area of video teleconferencing (VTC) combined with CINC requirements demand that we field a standard deployable VTC capability.

## Capabilities Goals

- Develop a series of MEB C4 architectures.
- Field a command standardized JTF/MAGTF C4 enabler capability.
- Develop a capability to manage a relevant Common Operational Picture (COP) that meets MAGTF requirements.
- Extend SIPRNET to battalions, squadrons, and selected companies.
- Adopt a "shop-vice-develop" approach to fielding required joint communication architecture capabilities.
- Leverage commercial products whenever possible.
- Use a common C4 architecture in Supporting Establishment and deployed environments.
- Leverage Joint Standards to the maximum extent.
- Preserve frequency spectrum availability.
- Resource and deploy a standard deployable VTC capability.
- Develop an integrated IT enterprise architecture.
- Ensure all future architectures are tested by the SE&I Division.
- Ensure all future systems are tested in the Systems Integration Environment (SIE).
- Facilitate the transition to web-based applications.

HQMC C4 Department advocates the development of several key Joint capabilities, systems, and tools to support our overall Marine Corps C4 capability.

- A family of radios (e.g. Joint Tactical Radio System (JTRS)) that will combine the numerous single function programs of



our current inventory, into a single, interoperable, joint radio program. It will be a secure, software programmable, multi-band, multi-mode digital radio that will replace existing radios at the tactical level. This capability is the key to wideband tactical networking.

- The Joint Network Management System (JNMS) performs detailed network planning, activation, monitoring and control, spectrum planning and management, security management, defensive information operations, and management of the joint switched network backbone.
- The Joint Collaboration Tool (JCT) will provide core functionality of shared applications, virtual workspace, voice/audio, whiteboard, chat and video. The JCT will provide the common denominator for joint collaborative interoperability within the MAGTF and across the Joint Task Force. This enhances the warfighters' ability to meet mission objectives and establishes a foundation for a long-term collaborative interoperability solution.

As our bandwidth requirements increase, the availability and preservation of frequency spectrum becomes key to employing future battlespace command and control systems. The demand on the frequency spectrum will require aggressive, coordinated management to ensure all C4 spectrum uses are accomplished free of interference. As a result, frequency manager billets must increase to effectively manage increasing spectrum requirements.

The role of advocates and functional managers in developing C4 systems is becoming more critical. Among the planned programs to meet warfighter requirements are the following examples:

- **Unit Operations Center (UOC) –** a modular/scaleable facility with maximum commonality across command echelons to integrate current and planned battlespace automation systems. The UOC will provide unit commanders with the ability to communicate world-wide, draw on national intelligence assets, direct preparations for deployment, and coordinate support for deployed forces.

- **Common Aviation Command and Control System (CAC2S) –** an integrated C4I workstation incorporating common messaging, database, network, security, and display services in support of automated aviation planning, situational awareness, decision aid, and tactical air operations.

- **Theater Battle Management Core System (TBMCS) –** an information and decision support system designed to plan and control air operations, including air and space control and air missile defense. TBMCS supports combined Joint air operations for the Joint Forces Commander (JFC). This system replaces the Contingency Theater Automated Planning System (CTAPS) in use today.

- **Advanced Field Artillery Tactical Data System (AFATDS) –** a network of computer workstations that process and exchange information from forward observers to fire support elements for all fire support assets (field artillery, mortars, naval gun fire, attack helicopters, and close air support).

- **Combat Identification (Combat ID) –** provides the classification of friendly, enemy, or neutral objects in the battlespace to enable, with high confidence, the timely application of tactical options, and the employment of weapons.

- **Enhanced Position Location Reporting System (EPLRS) –** a system developed to support battlespace automated systems that provide near-real time, jam-resistant, secure data distribution and communications, identification, position location, navigational aid, and automatic reporting of tactical forces.

- **Integrated Logistics Capability (ILC)** – a decision-making capability that provides logistics commanders with the ability to anticipate MAGTF commanders' requirements and to locate, retrieve, move, and repair goods in support of required operational capabilities. ILC facilitates the transformation of logistics distribution and maintenance systems to minimize the forward-deployed logistics footprint.

- **SHF Tri-band Satellite Terminal** – a multi-band satellite ground terminal capable of providing quick reaction communication via satellite. Data rates of 9.6 kbps to over 8 Mbps are supported. The system is entirely self-contained with integrated enclosures. The basic pallet can be mounted directly to a HMMWV or stand-alone trailer.

- **Secure Mobile Anti-jam Reliable Tactical Terminal (SMART-T)** – a HMMWV-mounted EHF terminal that provides secure, survivable, anti-jam satellite communications. SMART-T, which can operate at bandwidths of up to T-1 (1.544 Mbps) provides a satellite interface to permit uninterrupted communications as advancing forces move beyond the line-of-sight capability of deployed large-scale communications assets.

- **Digital Technical Control (DTC)** – facilitates the installation, operation, restoration, and management for individual circuits and digital links consisting of many multiplexed circuits. It provides the primary interface between subscriber systems/networks within a local area and long-haul multi-channel transmission systems to transport voice, message, data and imagery traffic.

- **Tactical Data Network (TDN)** – an interconnected network of gateways and servers. Each subscriber uses a combination of common user long haul transmission systems, local area networks, single channel radios, and switched telephone systems. TDN will provide the MAGTF commander with a completely integrated data and communication network infrastructure.

- **Transportation Coordinators' Automated Information for Movements System (TC-AIMS)** – an automated capability to plan, coordinate, manage, and execute logistic movements through all phases of MAGTF operations. This includes at origin, from origin to point of embarkation, from point of debarkation to destination, and at destination. TC-AIMS provides the MAGTF commander with a comprehensive solution for logistics support.

- **Unit Level Circuit Switch (ULCS)** – a future ULCS complement, the ULCS Transition Switch Module (TSM) PIP is a stackable ISDN capable system.

## Policy and Standards

The Marine Corps warfighting environment includes Joint and multinational operations — and when discussing Naval, Joint, or multinational operations, the topic rapidly moves to interoperability.

Both Joint and Marine Corps standards and policy provide the foundation for meeting our current requirements and our needs for warfighting effectiveness, interoperability and affordability.

The Marine Corps is primarily a "buyer" not a "developer" of C4 systems. The C4 Department develops, adopts, promulgates and oversees compliance with internal and external IT standards. We will continually press for Joint solutions to our C4 systems and information systems requirements. We want capabilities that are born Joint.

Adherence to enterprise IT and C4 systems standards — such as the Joint Technical Architecture (JTA) and the Defense Information Infrastructure Common Operating Environment (DII COE) — is

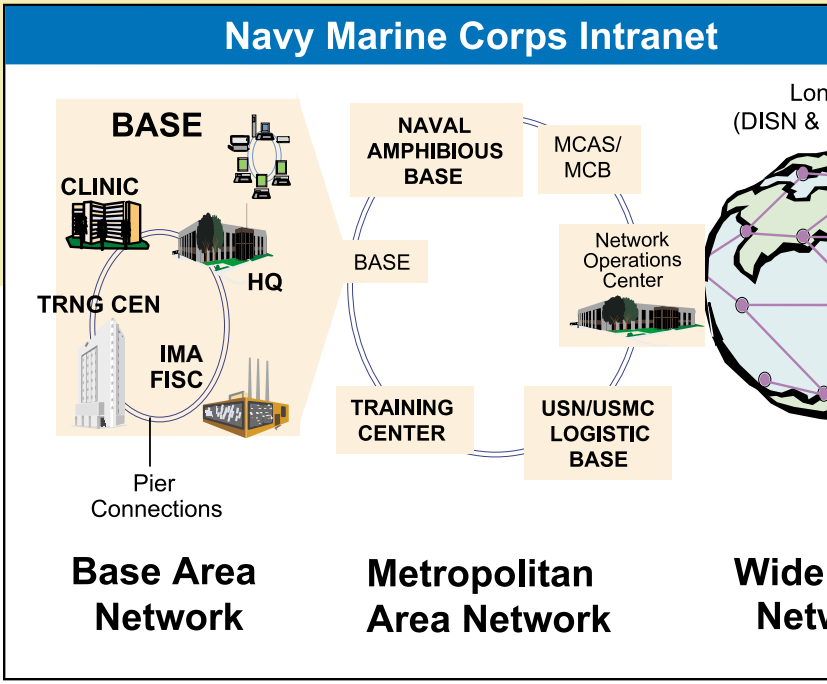
fundamental to ensuring our interoperability. These standards govern the hardware and software fielded to our Operating Forces and Supporting Establishment. Moreover, these standards cover the spectrum of functionality, from the desktop to the fighting hole. We will support the JTA and the DII COE.

The Systems Engineering and Integration (SE&I) Division within the MCSC ensures that all of our C4 systems acquisition and development comply with the DoD-designated Joint technical standards. The function of the SE&I Division is to establish and enforce interoperability so Marine Corps C4 systems work as a C4 "system of systems" in the MAGTF and Joint/multinational framework. The SE&I Division centrally identifies, manages, and enforces interoperability standards and integration engineering processes.

Complementing the SE&I effort is the Systems Integration Environment (SIE) at the Marine Corps Tactical System Support Activity (MCTSSA). Our developers will use this integration environment to test systems and network configurations, ensuring our tactical C4 systems perform as advertised, before fielding. The SIE also supports rapid acquisition initiatives since systems and configurations can be tested, adjusted, and re-tested in a realistic operational environment.

## Infrastructure

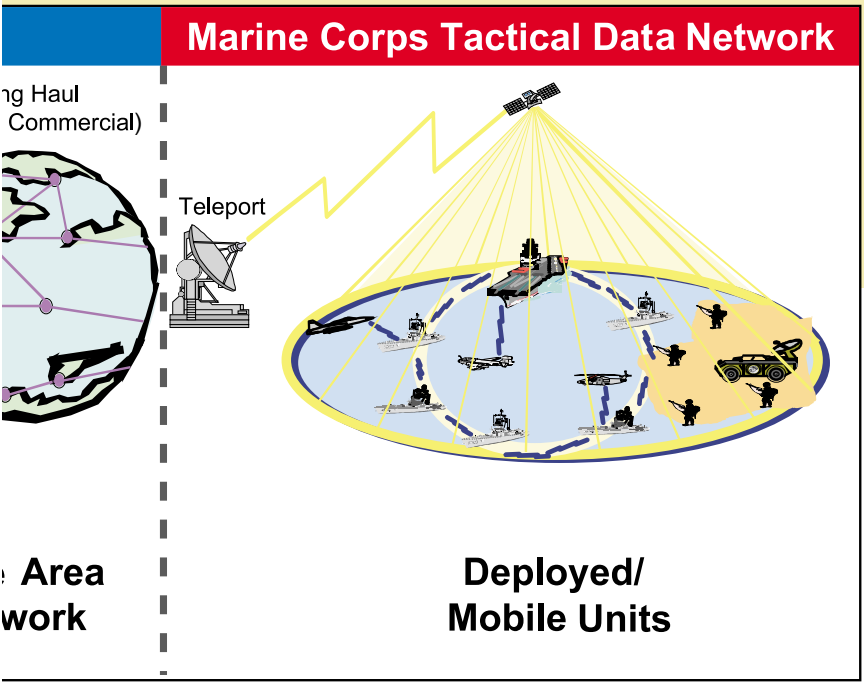
The Marine Corps must be prepared to fight as part of a coherent Joint force in conjunction with our allies — fully interoperable and seamlessly integrated — capitalizing on technologies that will lead to successful expeditionary operations.




Our infrastructure investments over the past few years have provided us with one integrated, global, secure network. We need to continue this effort as we develop new systems and streamline our legacy applications while simultaneously supporting the demands of the MAGTF. In close coordination with all the services, we continue toward the goal of a DII COE that allows us to seamlessly operate over the entire modern battlespace regardless of platform or weapons system.

The current and future warfighting environment is information intensive. To help achieve significant improvement in direct support of the warfighter, the Marine Corps designed and implemented the Marine Corps Enterprise Network (MCEN), which is the Marine Corps foundation for the Navy Marine Corps Intranet (NMCI).

The Global Information Grid (GIG) is the DOD network initiative to ensure information superiority through a single, secure information grid providing seamless, end-to-end capabilities for warfighters. This includes:




- Joint, high capacity network operations
- Fused information for weapons systems
- Support for strategic, operational, and tactical missions
- Plug and play interoperability
- Integrated information for US and multinational users
- Adequate bandwidth on demand
- Distributed processing and storage of information
- Network defense against all threats
- Effective information assurance.

NMCI, coupled with the Marine Corps Tactical Data Network (TDN), will be the Marine Corps component of the GIG.

Commanders, regardless of their location, must have the ability to securely and rapidly access and transfer voice, data, video and imagery information anywhere in the world. This robust infrastructure must help commanders gather information quickly,

accurately, and selectively; it must also securely provide the right information in a timely manner to the right person, in the right place, and in the right form. It ensures that data and information is accessible and usable across functional and organizational boundaries, both internal and external to the Corps.

NMCI and the Marine Corps TDN will provide end-to-end connectivity to significantly improve decision support to the warfighter. This provides the Marine Corps with centralized operational, technical, and configuration control of our network, which provides comprehensive, reliable, and scaleable connectivity to all Marine Corps activities.

It is our goal to establish a seamless, end-to-end infrastructure that fosters a common environment in which all system applications will operate. This common information baseline coupled with C4 acquisition consolidation, SE&I and SIE integration efforts and the Information Technology Steering Group (ITSG), streamlines our focus on the information system development process and fortifies our MAGTF and Joint capabilities.

As the DoD transitions to the GIG, our data and information infrastructure must allow for seamless integration and interoperability of systems, web-based applications, people and processes. The “glue” that holds these networks together is the Marine Corps Information Technology Network Operations Center (MITNOC).

## Marine Corps Information Technology Network Operations Center

The MITNOC ensures continuous, secure, and global communications as the Data Network Operations Center for the Marine Corps. It is the operational arm of the MCEN and the NMCI interface for the Operating Forces. It will provide configuration management during the transition to NMCI. In support of deployed Operating Forces and Supporting Establishment organizations, the MITNOC provides network technical advice and assistance during the planning phase of contingencies or exercises and coordinates swift solutions to networking problems. Additionally, the MITNOC serves as the Marine component of the Joint Task Force Computer Network Defense (JTF CND).

The mission of the MITNOC Deployed Support Section is to provide network technical advice and assistance to deployed Operating Forces during all phases of operations and exercises.

MITNOC support during the planning phase includes the review and validation of the Operating Forces' information network and security. MITNOC support also includes the coordination of configuration management changes for all MCEN equipment such as:

- Domain name servers
- Deployed Security Interdiction Devices (DSIDs)
- Routers
- Firewalls
- Virtual Private Network (VPN) connections
- Intrusion Detection Sensors (IDSs).

Mobile Training Teams (MTTs) are provided on request or as pre-planned support activities to directly support the organic MEF and MSC network administrators. MTTs augment staffs during planning and training efforts.

Additionally, the MITNOC Deployed Support Section serves as the liaison between the Operating Forces and IT organizations within the Marine Corps, Navy and DISA.

MITNOC support includes a 24x7 “virtual” assistance capability and on-call "fly away" teams.

# Manpower and Training

We must produce Marines capable of exploiting new technologies to our advantage in the modern battlespace. This means that we must focus on the health of the C4 related occupational fields (OccFlds), to include our reserve forces, and provide all Marines with a solid foundation of C4 skills.

## Health of the C4 Occupational Fields

Our overarching manpower goal is to ensure that we have trained Marines with the appropriate skills to install, operate and maintain the C4 systems we employ. We are faced with several challenges: (1) recruiting and retaining our Marines; (2) training Marines to meet C4 technology challenges; and (3) ensuring our units are staffed with the appropriate expertise and experience. We are committed to working with DCMC, M&RA; CG, MCCDC; and the Advocates to identify both the needs of the C4 career force and the ways in which those needs can be met.

First and foremost, we must recruit qualified Marines into the Corps. Then we must retain our "career Marines." In testimony to Congress and in ***Marine Corps Strategy 21,*** the Commandant made retention of technically skilled Marines a key issue. Thus, we are pursuing the following initiatives: (1) increasing Selective Reenlistment Bonuses (SRB), (2) encouraging lateral move options to allow technically capable Marines to move into C4 MOSs whenever practical, and (3) expanding incentives, such as service schools and other training opportunities to motivate our Marines to stay in the Corps.

**C4 OccFld Manpower Goals**

1. Implement all Force Structure Planning Group (FSPG) initiatives.
2. Review and restructure Unrestricted Officer billets to ensure the right grades, numbers, and missions, at the right unit levels.
   a. Return Infantry/Artillery Battalion S-6 billets to Captain vice Lieutenant.
   b. Redesignate Major 0602 billets in selected commands to the 9910 MOS to alleviate staffing shortages in the Operating Forces.
   c. Implement use of MOS 9985 C4I planner, in key billets throughout the MAGTF to capitalize on the unique education provided these officers.
3. Complete the C4 Restricted Officer Review ensuring it compliments the 0602 Status of the Force initiative.
4. Coordinate and execute T/O changes that align units' billet/MOS mixes to meet requirements on new technologies and systems.
5. Continue with ongoing efforts to reorganize C4 OccFlds in order to remain relevant to current technologies and responsive to retention challenges.
6. Maintain emphasis on SRB and other retention tools to ensure all efforts are being made to keep quality C4 leadership at the officer, SNCO, and NCO levels.

There is no substitute for an experienced C4 force. As our warfighting capabilities increasingly rely on C4 and information technology to support warfighting functions, effective C4 clearly emerges as a warfighting requirement. Ensuring that our C4 community is appropriately structured and sufficiently staffed is imperative. To this end, Director C4, in concert with DCMC, M&RA; CG, MCCDC; and the Advocates, is developing initia-



tives that will provide the "right" force to succeed on the modern battlespace.

We are working to ensure that we have adequately structured the C4 OccFlds to satisfy our current and future requirements. We have conducted a comprehensive review to identify — and we continue to evaluate and refine — the skills and abilities we need. We know we will be dependent on:

- Voice networks
- Data networks
- Video networks.

### C4 OccFld Officer Goals

Within our officer community, we are pursuing the following goals:

- Alleviating shortages of field grade Command and Control Systems Officers in the Operating Forces
- Upgrading Infantry/Artillery Battalion S-6 billets from Lieutenant to Captain to eliminate the gap existing between billet demands and required operational experience
- Assigning C4 Special Education Program (SEP) trained officers directly from school to selected Operating Force billets
- Establishing clear career and training paths for our C4 restricted officer community.

### C4 OccFld Enlistment Goals

Within our C4 enlisted community, we are pursuing the following goals:

- Transitioning enlisted Marines in OccFlds 25 and 40 into the single OccFld 06
- Revising Individual Training Standards (ITSs) for enlisted Marines and developing proper billet structure, MOS grade shaping, and new training requirements to implement these new MOSs in response to new systems
- Revising the Data/Communications Maintenance OccFld to align it with emerging technologies and maintenance/logistic philosophies
- Creating a new MOS to provide day-to-day Information Systems Security Specialists
- Creating new MOSs that better identify and categorize the responsibilities and duties of the present-day Small Computer System Specialist.

To support these networks, we will require trained Marines who can design, configure, install, operate, and maintain the associated hardware and software. Required key skills are:

- Functional database administration
- Systems administration
- Information Assurance (IA).

Additionally, we are responding to the challenges posed by new program initiatives. As new systems are fielded, they alter the required skills and additional capabilities impacting the development and health of the C4 community. The Marine Corps will design and implement C4 support plans for all its newly developed C4 systems in accordance with guidance from ASD C3I/DoD CIO.



The 1999 FSPG made structure recommendations resulting in a significant increase to the C4 billet structure. These Marines are required to support the C4 backbone over which warfighting systems will ride. These backbone systems include Secure, Mobile, Anti-Jam Reliable Tactical Terminal (SMART-T); Tactical Data Network (TDN) Gateway and Server; Digital Technical Control Facility (DTC); Unit Level Circuit Switch (ULCS); and Multi-band/Multi-mode Satellite Systems.

We are realigning our MOSs and core competencies demanded by the changing environment and introduction of new C4 systems. In both the officer and enlisted occupational fields, we must appropriately distribute billets to each unit requiring C4 skills and ensure that we have grade-shaped each OccFld to fill those billets.

## Training and Education

As the Marine Corps focuses on Information Superiority, **we must ensure that our C4 training and education meets the needs of all Marines who will employ and maintain tomorrow's C4 systems**. The complexity of modern systems is not limited to the C4 community. We must ensure all Marines have the appropriate technical skills to effectively function in the modern battlespace.

We will focus on delivering the appropriate level of training to the individual Marine, effectively and efficiently, in the most appropriate format. Modern training methods such as computer based training (CBT), multimedia presentations, distance learning, base extension services and web-based technology are being integrated into existing and new systems curricula. This offers greater flexibility and a more individualized learning environment. Contract options on NMCI and

### C4 OccFld Training and Education Goals

- Incorporate C4 systems training at appropriate schools for both officers and enlisted Marines regardless of MOS.
- Upgrade training facilities at major commands to support C4 systems training.
- Increase IT courses content in distance learning, base extension services, and Internet extension programs.
- Develop specialized warrant officer training and modernize current training to meet new requirements for MOSs 2510/2810/4010.
- Support the "street-to-fleet" concept by reducing or increasing C4 training for specific MOSs, as necessary, to fulfill requirements.
- Establish, relocate or merge C4 training as necessary to promote more efficient and effective training.

Marine-contractor teaming efforts offer a true opportunity to upgrade training facilities to support C4 systems training. Additionally, a NMCI contract option offers the capability to interface simulated tactical networks directly to the NMCI architecture so that warfighting staffs can hone battle planning skills.

The C4 Department, Training & Education Command, M&RA and the Operating Forces are developing initiatives to ensure our Marines possess the right skills to succeed in the modern battlespace.

There is no substitute for an experienced C4 force. With the implementation of these initiatives we can be sure that all Marines will have the personal and professional skills and C4 expertise to succeed now and in the future.

## Capitalize on Reserve Capabilities

Marine Forces Reserve has a significant and integral role in the mission of Marine Corps C4. We continue to evaluate the ways in which we can best use reserve forces in support of the active component. We are evaluating the following initiatives to more effectively employ our Reserves by:

- Reorganizing our units to assume a more integrated and direct support role with active component units
- Expanding the involvement of individual reserve C4 Marines with IT skills to support a "red-team" capability in evaluating our CND readiness in exercises and contingencies
- Identifying the C4 skills of our IMA reserves to augment the active component, such as network engineers, system administrators, Information Assurance specialists and other technology-focused skills.

# COMPUTER NETWORK DEFENSE (CND)

The United States possesses the world's strongest military and largest economy. Both are increasingly reliant on critical infrastructures and on computer and telecommunication systems to support essential information capabilities. These information systems — vital to carrying out DoD's mission — are targets for our adversaries.

Listed below are the Marine Corps CND overarching objectives:

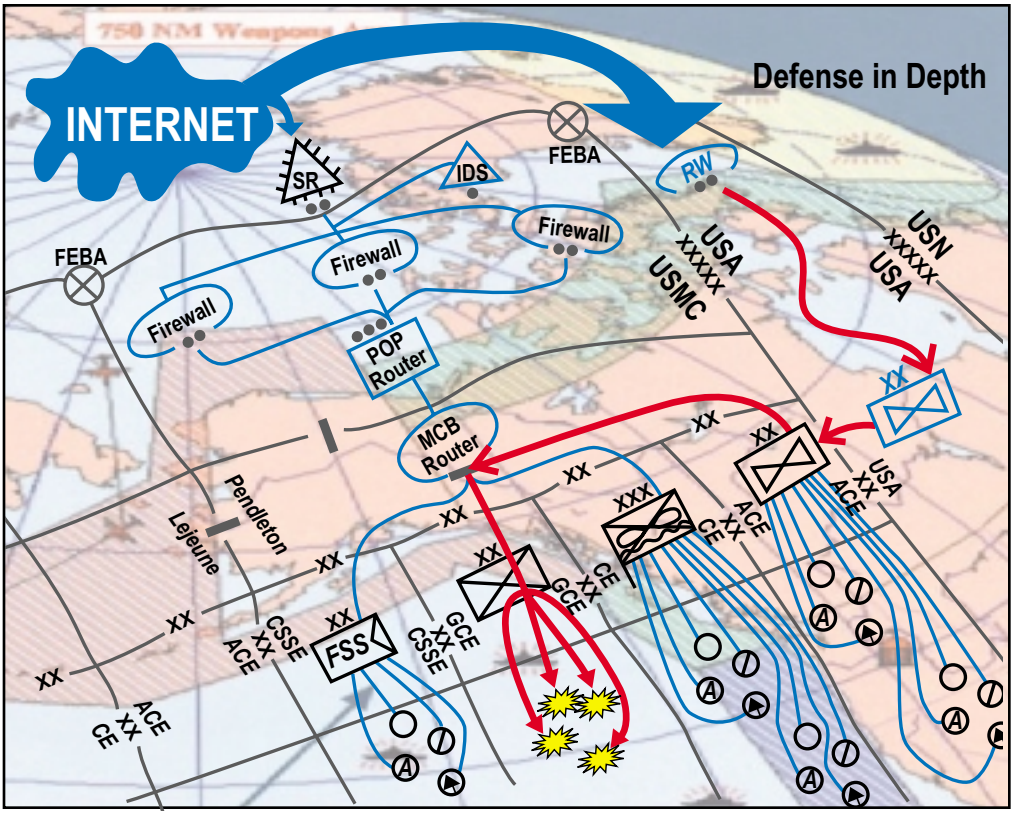
- Exploit state-of-the-art technology to counter rapidly changing threats and vulnerabilities
- Provide awareness training for all users and all system support personnel to counter emerging threats and other vulnerabilities
- Deploy CND tools throughout the enterprise
- Employ a defense-in-depth strategy by integrating the capabilities of people, procedures, and technology to achieve strong, effective, multi-layer, and multi-dimensional protection.

To ensure the Marine Corps CND posture meets its requirements we will complete the following tasks:

- Foster a strong Marine component relationship in support of Joint Task Force Computer Network Operations (JTF-CNO)
- Ensure optimum entry-level and sustaining IA training for all personnel including the creation or modification of MOSs

*"Stealth among other things is about protecting our C4 infrastructure."*

*-General James L. Jones,*
*Keynote Address to Fletcher Conference, 26 March 2001*




*A USMC Standard Integrated Security System*

- Implement effective user/system administrator training and certification
- Employ a Key Management Infrastructure (KMI) that provides a single interface for the secure creation, distribution, and management of the cryptographic solutions implementing CND

- Employ a Public Key Infrastructure (PKI) that incorporates public key certificates and public key-enabled applications
- Field Smart Card Technology (SCT) to enhance the accuracy and security of business processes, electronic transactions and computer networks
- Implement a Critical Infrastructure Protection (CIP) program to ensure the availability of USMC C4 systems and assets that support MAGTF mobilization, deployment, and sustainment
- Develop Continuity of Operations Plans (COOP) to ensure the continuity of automated processes and information-based operations
- Employ Base Network Intrusion Protection Systems (BNIPS) and Deployed Security Interdiction Devices (DSID) to provide commanders with tailored network protection suites for Supporting Establishment and deployed use.

We must discipline our enterprise-wide network operations to ensure that IA policies are followed and that proven technical solutions and successful measures are put in place. The human factor is an essential element in these efforts.

# THE C4 WAY AHEAD — INTEGRATING C4 INTO WARFIGHTING FUNCTIONS

The Marine Corps must continue to move forward in the critical area of C4. The objective is a seamless, secure, end-to-end C4 capability that allows Marines to rapidly and successfully execute their missions.

To meet this objective, our initiatives include the following actions:

- Refine our process of transitioning state-of-the-art technology into interoperable and integrated components of the Marine Corps C4ISR Family of Systems (FOS)
- Align our MOSs and core competencies demanded by the changing environment and introduction of new C4 systems
- Ensure C4 training and education meets the needs of all Marines who will employ and maintain tomorrow's C4 systems
- Ensure, in close coordination with the Navy, that amphibious requirements are clearly defined, shipboard installations are funded and future operational concepts are supported
- Identify MAGTF baseline bandwidth requirements in support of a MEU, MEB, MEF, and MARFOR in Joint/multinational operations, both ashore and afloat
- Field/buy new C4 systems that are:
  - born Joint and interoperable
  - highly mobile
  - easy to IOM

- less manpower intensive
- support seamless communications
- based on open standards
- designed with security built-in from the beginning

- Revitalize the roles and responsibilities of the Chief Information Officer under the Director, C4. Key CIO functions will include:
  - information technology (IT) strategy formulation and planning
  - IT capital planning and investment
  - governance
  - architecture and standards
  - delivery of essential IT/IM services
  - ensure CND and IA
- Charter the Director, HQMC C4 as the Chair of the Information Technology Steering Group (ITSG), a group empowered to provide interagency management oversight of information technology applications and allocation of supporting information technology resources
- Field a standardized JTF/MAGTF C4 enabler package
- Preserve our frequency spectrum as our future bandwidth requirements increase
- Field a wideband radio system that will be our tactical C4 backbone.

The full potential of C4 must be realized if we are to meet the requirements of expeditionary warfare. We must field forces that are more effectively prepared for the complex, dynamic, and asymmetric threats we will face.

The key to success in the future battlespace includes the following enablers:

- Modernize and protect our network infrastructure
- Identify, fund, and field those C4 systems that will satisfy emerging warfighter requirements
- Practice discipline in development of new web-based applications
- Ensure we have Marines trained and equipped to manage, operate, and maintain C4 assets
- Position ourselves to rapidly insert emerging technologies.

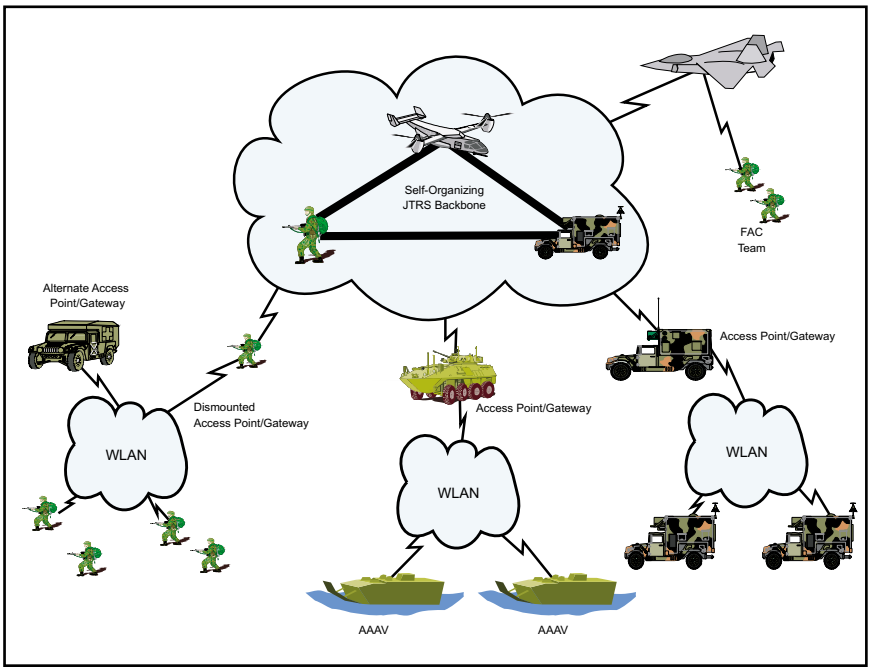
Every day, new technologies are changing how we train and fight. While the nature of war has not changed, emerging technologies are reshaping the battlespace, increasing our operational capabilities, and compelling us to reassess our doctrine and warfighting concepts.

As we move into the 21st Century, we are seeing the growing importance of information superiority in our arsenal of weapons and their support systems. Information superiority provides the MAGTF the ability to operate inside the decision cycle of our adversaries. C4 is the enabler that enhances all warfighting functions through better situational awareness and speed of information flow. C4 allows the MAGTF to fight on the most advantageous terms, facilitating speed and accuracy of rounds and bombs on target, as well as quick logistical response and the rapid maneuver of forces.

To support our evolving operational concepts, leveraging C4 to its greatest advantage will require changes in organization, equip-

*"Our goal is to capitalize on innovation, experimentation, and technology to prepare Marine Forces to succeed in the 21st century."*

*Marine Corps Strategy 21*




*Future Networked Marine Corps*

ment and systems, and realistic training. We must integrate these changes in a disciplined and systematic way.

As we evolve to a networked environment, we are placing an increased reliance on advanced C4. While C4 enhances our warfighting capabilities by providing timely, accurate information to decision makers, it also results in the need for information assurance to protect against, and react to, network attacks. The vulnerability to network attacks requires strong defenses and vigilance to ensure that our battlespace dominance and tactical flexibility are not compromised.

Wherever and whenever the next conflict arises, the Marine Corps must be ready to operate in a fully networked environment with our sister services, government and non-government organizations, and multinational partners. We must exploit information and network technology to integrate widely dispersed commanders, sensors, forces and weapons into a highly adaptive warfighting system. Achieving this level of information integration enhances unprecedented mission effectiveness.

We must — and we will — lead the way in using C4 to fight faster and smarter.